

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Prior Application: K. MABUCHI et al
Serial No. 09/378,768
Filed: August 23, 1999

Group Art Unit: 1741
Examiner: E. Smith-Hicks
For: A STEEL STRIP DESCALING APPARATUS
AND A STEEL STRIP MANUFACTURING
APPARATUS USING THE DESCALING
APPARATUS

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

IN THE SPECIFICATION

Page 1, before the first line of the specification please insert the sentence --This is a divisional application of U.S. Serial No. 09/378,768 filed August 23, 1999.--.

Page 1, first full paragraph (lines 3 and 4), replace the paragraph as follows:

The present invention relates to a steel strip descaling apparatus and a steel strip manufacturing apparatus using the descaling apparatus.

Page 1, third full paragraph, (lines 10-13), replace the paragraph as follows:

The Japanese patent Laid-open No. 3-56699 describes pumping an electrolyte to a steel strip submerged in the electrolyte from the hole of an electrolyte in order to prevent the steel strip from waving.

Page 1, fifth full paragraph, (lines 17-23), replace the paragraph as follows:

3. SUMMARY

However, in the art of No. 3-56699, because electrolyte and an electric conductor do not contact each other directly, a large quantity of electrolyte is necessary. The apparatus is large because of a large electrolyte bath. As the electrodes are also located in the electrolyte, a third disadvantage of this prior art technique is that short circuits occur among the electrodes through the electrolyte.

Page 2, third full paragraph, (lines 10-14), replace the paragraph as follows:

To achieve the above purpose, a feature of the present invention is that electrodes have jet openings which jet the electrolyte to the steel strip, that is to say, the electrode is integrated with the nozzle which jets an electrolyte.

Page 2, fifth full paragraph, (lines 19-23), replace the paragraph as follows:

According to a feature of the present invention, it is possible to reduce the size of an electrolyte tank storing the electrolyte, because the quantity of an electrolyte decreases by jetting the electrolyte in the air. Therefore, the descaling apparatus is miniaturized.

Pages 2 and 3, the paragraph bridging these pages from page 2, line 24 through page 3, line 2, replace the paragraph as follows:

In contrast to the conventional art wherein the steel to be treated is submerged in the electrolyte, the present invention's use of jetting means for jetting the electrolyte onto the steel strip obviates immersion of the steel strip and the occurrence of short-circuit electric current between the electrodes, thus improving electric power efficiency.

Page 3, the fourth full paragraph, lines 12-14, replace the paragraph as follows:

Another feature of the present invention is that the descaling apparatus further has force adjustment of the jetted electrolyte.